Combat Air Teaming System(CAT) – THE FUTURE WARRIOR

The Hindustan Aeronautics Limited along with a private start-up partner New Space (NS) has unveiled an indigenous programme called Combat Air Teaming System that will have the Tejas LCA with various unmanned autonomous assets here at Yelahanka Airforce Station during the Aero India 2021. The highlight of the display was the lead platform of the CATS family, The Warrior. The other members of the CATS family that broke the cover during the show includes:

- **CATS Warrior**
- **CATS LCA MAX**
- **CATS Hunter – UAV with a payload capability**
- **CATS Alpha – S – Switchblade swarm drone**
- **CATS Infinity High Altitude Pseudo-Satellite**

CATS – WARRIOR UAS

The Combat Air Teaming System by Hindustan Aeronautics Limited along with New Space (NS) was pursuing an unmanned “Loyal Wingman” drone programme and unveiled the concept during the Aero India 2019. Two years after, during the Aero India 2021, the concept turns into a reality with a full scaled mockup taking the breath out of the spectators! HAL unveils the “CATS Warrior” Loyal Wingman UAS developed to team alongside the existing fighter platforms like Tejas, Rafale, Su-30 MKI and Jaguars.

The future of air combat will be an amalgamation of the manned and unmanned platforms in formations tasked to suppress heavily defended air space. This concept of warfare moves from the current practice of manned missions inside the enemy airspace. Being in the enemy airspace with a

manned platform risks them being shot down, captured and held hostage, which could change the nature of the operation to geopolitical spat. CATS enable to overwhelm the enemy strongholds such as strategic forward military bases and air defences with swarm of drones while the mothership (CATS LCA MAX) still remaining in our own territory controlling these swarms.

Structural Features:

- A single serpentine air intake on the top of the fuselage leads to two engines.
- A hybrid design where the frontal cross-section looks like the Boeing's Air Power Teaming System "Loyal Wingman" and from the mid-fuselage to the tail like the US Kratos XQ-58 Valkyrie "Loyal Wingman".
- Two internal weapons bays (IWB) on both sides of the fuselage to load two SAAW and two external pylons to carry two more SAAWs.
- It might also get an external loadout on either side with NG-CCM, as shown during the Air Show.

The wingman will be powered by modified PTAE-7 3.75 kN turbojet engine for HAL. In future, this may be upgraded to a 25kN HAL HTFE-25 turbofan engine. According to HV Thakur, The Warrior will be capable of doing air-to-air, air-to-ground and anti-shipping missions. The Warrior will have 2two mission profile:

1. Mission withing the combat radius of 350 kms and fly back.
2. Long range mission with combat radius of 800 kms and sacrifice itself crashing into the target.

As it's an unmanned asset, it can be directed towards a target and sacrificed in case it cannot be flown back to our territory. Currently, The Warrior is specifically designed for the IAF and the Warrior would be developed in different scales/sizes. The mockup displayed is around 9 meters and the smallest one will be around 3 to 4 meters. These scaled prototypes are expected to fly within this year!

To support the Manned Unmanned Teaming (MUM-T) operations, New Space Research & Tech are exploring and developing cutting edge AI-based combat algorithm under a program called “ACID”.

CATS LCA MAX

The static display of the CATS loadout with Tejas indicates that it will be the heart of the entire system acting as the mothership to team with the other CATS platforms. The CATS-MAX control all its swarms through a secure data link. The variant to be used as CATS MAX will be the twin-seat LIFT with the wide area display.

CATS HUNTER

CATS Hunter is a SCALP style swarm drone carried under the CATs-MAX wings. These Hunters are launched from the CATS-MAX when it reaches the launch point and glide it to 200 to 300 kms towards the enemy target and execute the mission. It can also carry 250kg of high explosive warhead which also makes them a suicide drone with cruise missile capabilities.

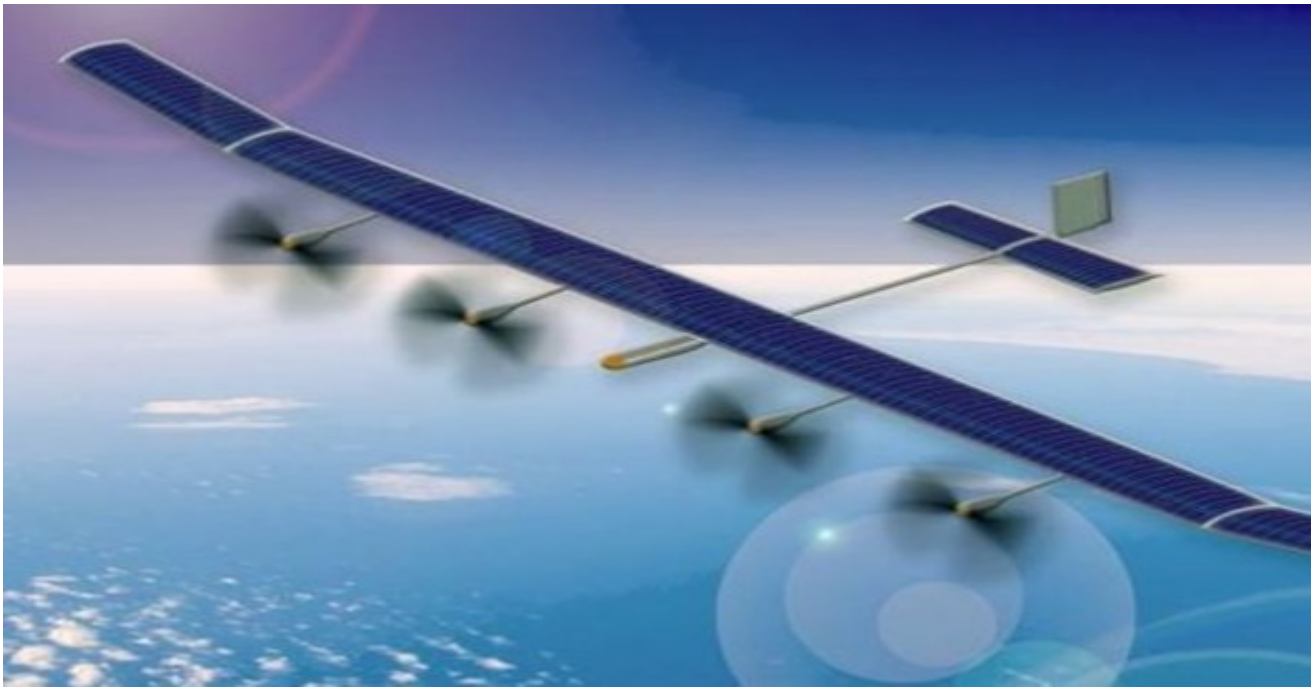
HAL test pilot Group Captain Harsh Vardhan Thakur quotes about the Warrior as "**Single mission, multivariant drone which can be used as a conventional cruise weapon**".

CATS ALPHA – S

CATS Alpha-S (Air Launched Flexible Asset) is a carrier which can house 5 Alpha switchblade drones. The carrier will get separated from the mothership and glide for around 100 kms and then release the drones to multiple targets which are controlled by the lead aircraft through AI and Machine Learning Algorithm.

The Alpha launcher can glide for 75 to 100 kms to the hostile territory and when it reached the release point, the swarm drones come out and propels itself to around 150 kms!

CATS INFINITY HIGH ALTITUDE PSEUDO SATELLITE



CATS Infinity will be a solar powered high-altitude pseudo satellite drone designed with an endurance of around 90 days and a cruising altitude of over 65,000 feet. This drone will act as the epicenter of the drone warfare under the CATS program.